USSR UDC 669.71.053.4

ARONZON, V. L., BERKH, V. I., LEVIN, M. V., LOKSHIN, R. G., Avtomatiz. Proizv. Protsessov. Tsvet. Metallurgii, Ordzhonikidze, "Ir" Press, 1971, pp 73-75.

alumina plants, based on mathematical models of the technological processes being controlled.

2/2

USSR

UDC 669.71.011.56

BERKH, V. I. LEVIN, M. V.

"Scientific and Technological Prerequisites of Developing Automated Systems in Alumina Production"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 183-188 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G122)

Translation: The sequence and content of the basic steps of creating automated control systems for the production processes of obtaining $Al_2O_3$ are discussed.

A list of scientific problems occurring in this case is introduced, and means of solving them based on the results of the scientific research work performed are indicated. The requirements on the technological process and equipment insuring the highest efficiency of the automated control systems for $Al_2O_3$ production are formulated.

1/1

USSR

UDC 669.71.055.4

ARONZON, V. L., GANZBURG, YA. D., LEVIN, M. V., LOKSHIN, R. G., FINKEL'SHTEYN, L. I.

"Algorithmization of Control of the Section for Preparing the Charge of the Alumina Shop at a Nepheline Plant"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 28-34 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G136)

Translation: Principles are formulated for a production raw material input control which insures stabilization and synchronization of material flows with observation of the required quality of the charge obtained. Control algorithms for individual sections are developed on this basis: bins, mills, a repulping machine, and a correction unit. There is 1 illustration.

1/1

USSR

UDC 669.712.1.05

AGRANOVSKIY, A. A., BERKH, V. I., KAVINA, V. A., LEVIN, M. V., LYAPUNOV, A. N., MONTVID, A. E., MUNITS, I. N., and CHERNIN, V. N.

"Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of Non-Ferrous Metals), Moscow, Izd-vo "Metallurgiya," 1970, 320 pp

Translation of Annotation: Data on the physico-chemical properties of the most important aluminum compounds and aluminum solutions are presented, phase diagrams of chemical systems determining the processes of alumina production by alkali methods are given, and standards and technical conditions are reviewed.

Various alumina production methods and reference data on the technology and equipment of alumina production are described.

The handbook is intended for engineers and technicians engaged in the aluminum industry. Ninety-one figures, 116 tables, 176 references.

TABLE OF CONTENTS (Abridged)

USSR

AGRANOVSKIY, A. A., et al., "Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of Non-Ferrous Metals), Moscow, Izd-vo "Metallurgiya," 1970, 320 pp



2/3

USSR

AGRANOVSKIY, A. A., et al., "Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of Non-Ferrous Metals), Moscow, Izd-vo "Metallurgiya," 1970, 320 pp



3/3

USSR

UDC 669.162.267.645

LEVIN, M. Z., MACHIKIN, V. I., SKLADANOVSKIY, YE. N., KUZUB, A. G., and KRASAVTSEV, I. N., Donetsk Polytechnic Institute, Donetsk Metallurgical Plant

"Desulfuration of Pig Iron with Regulatable Introduction of Ingotted Magnesium"

Moscow, Metallurg, No 2, Feb 73, pp 10-12

Abstract: From 1970 on, studies have been conducted at the Donetsk Metallurgical Plant and Donetsk Polytechnic Institute on the Development of equipment for use in the desulfuration of pig iron by regulated introduction of magnesium ingots. A new method of introducing the ingotted magnesium into liquid pig iron serves as the basis of the equipment. Diagrams show the equipment for regulated magnesium introduction and a schematic of the gas supply to the evaporator. Industrial test results are given. Two figures, one table.

1/1

USSR

UDC 621.396.677

LEVIN, O. I.

"Algorithms for the Solution of Nonlinear Magnetostatic Problems"

Tr. Mosk. in-ta radiotekhn., elektron. i avtomatiki (Works of the Moscow Institute of Radio-Engineering, Electronics and Automation), 1972, vyp.55, pp 50-60 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B9)

Translation: The finite-difference method and the method of secondary sources for the solution of a magnetostatic problem are studied and compared, with a statement of the advantages and disadvantages of both. Results are given for the numerical calculation of the magnetic fields which were conducted on a computer. Original article: nine illustrations and one table. Resume.

1/1

USSR

UDC 621.396.677.001.24

LEVIN, O. I.

"Compound Problem on the Synthesis of a Linear Array"

Tr. Mosk. in-ta radiotekhn., elektron. i avtomatiki (Works of the Moscow Institute of Radio Engineering, Electronics and Automation), 1972, vyp.55, pp 87-107 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B34)

Translation: The author studies a problem associated with the synthesis of a radiation pattern for a linear antenna array with equidistant positioning of the emitters by emitter phase selection (phase synthesis). A series of practical examples is given. Original article: three illustrations and seven bibliographic entries. N.S.

1/1

UNCLASSIFIED PROCESSING DATE--03JUL7C

TITLE--NEW PHOTOSTABILIZERS OF POLYOLEFINS -U-

AUTHOR--ZIMIN, YU.B., LEVIN, P.I., MATVEYEVA, E.A., KEZDODY, A.A., SOTNIKOVA, L.P.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (1), 20-1

DATE PUBLISHED--------7C

33
5
38

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CHEMICAL STABILIZER, POLYETHYLENE, PHOTOEFFECT, LIGHT AGING, HYDROXYL RADICAL, KETONE, ORGANIC SULFUR COMPOUND, BENZENE DERIVATIVE, POLYMER/(U)PRK2 LAMP, (U)P2C2OT POLYETHYLENE, (U)P4D2OE POLYETHYLENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/1605 STEP NO--UR/C191/7C/000/001/002C/0021

CIRC ACCESSION NO--AP0049767

UNCLASSIFIED

Acc. Nr: AP0049767 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code: UR 0191

101351g New photostabilizers of polyolefins. Zimin, Yu. B.; Levin, P. I.; Matveeva, E. A.; Kozodoi, A. A.; Sofnikova, L. M. (USSR). *Plast. Massy* 1970, (1), 20–1 (Russ). The effects of 2-hydroxy-4-propoxyphenyl thienyl ketone (I), and 2-hydroxy-4-octyloxyphenyl thienyl ketone (II) as photostabilizers of low-d. polyethylene P 2020T (III) and high-d. polyethylene P 4020E (IV) were studied. Thus, 0.5–0.66% of I and II were added to III and IV and the polymers were aged under a PRK-2 lamp at 25°. The phys. and mech. properties of stabilized III and IV were unchanged after a 12 month exposure in the air, indicating that I and II were effective photostabilizers comparable to Benzone OA.

CKJR

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REEL/FRAME
19801685

7

1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--UNIFORMLY APPROXIMATE SUBSTITUTION OF A CIRCULAR ARC FOR THE ARC OF A CURVE -U-
AUTHOR-(02)-REMEZ, YE.YA., LEVIN, S.S.

COUNTRY OF INFO--USSR

SOURCE--UKRAINSKII MATEMATICHESKII ZHURNAL, VOL. 22, NO. 2, 1970, P. 189-202
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--METAL FORMING, CURVE GEOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0566 STEP NO--UR/0041/70/022/002/0189/0202

CIRC ACCESSION NO--AP0121238
UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0121238

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF AN ANALYTICAL METHOD OF APPROXIMATING THE ARC OF A CURVE BY A CIRCULAR ARC, BASED ON THE USE OF CHEBYSHEV'S MODULUS MINIMAX PRINCIPLE. THE METHOD LEADS TO A TRANSFORMED CHEBYSHEV PROBLEM THAT LENDS ITSELF TO SOLUTION BY CLASSICAL ITERATION. THE METHOD IS APPLIED TO SEVERAL PROBLEMS ASSOCIATED WITH THE MECHANICAL SHAPING OF METALS. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT MATEMATIKI, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

Acc. Nr. AA0031862

Abstracting Service: CHEMICAL ABST. 3-70

Ref. Code UK0000

54729z Alkylene glycols. Levin, S. Z.; Shapiro, A. L. (All-Union Scientific-Research Institute of Petroleum Processing) Brit. 1,177,877 (Cl. C 07c), 14 Jan 1970, Appl. 25 Aug 1968; 6 pp. Ethylene, propylene, and 1,2-hexylene glycols were prepd. in ≤97% yields by hydrating the corresponding alkylene oxides with 1.1–1.3 equivs. of $H_2O$ at 80–220°/20–180 atm. in the presence of $CO_2$; a quaternary salt ($Me_4N^+I^-$, $Et_4N^+I^-$, $Pr_4N^+Br^-$, $Et_3N.HI$, $PrNH_2.HI$, or $Et_2NH.HCl$) or KBr, NaI, LiBr, KI, or NaBr; and, optionally, 0.1–2% (based on the alkylene oxide) $NaHCO_3$, $Na_2CO_3$, or $KHCO_3$. For example, ethylene oxide 180, $H_2O$ 74, $Me_4N^+I^-$ 2, and $NaHCO_3$ 1 g were mixed; $CO_2$ was added until the pressure was 30 atm, the mixt. was heated to 100° and then gradually to 200° so that the pressure rose to a max. of 140 atm to give 237 g ethylene glycol and 7 g diethylene glycol. The other glycols were prepd. similarly, or, alternatively, the metal halide or the quaternary ammonium compd. was prepd. in situ; e.g. $Pr_4N^+Br^-$ was prepd. from $Pr_3N$ and PrBr.

BCPN

REEL/FRAME

19692010

USSR UDC:533.6.011

LEVIN, V. A., Moscow

"Strong Injection on the Surface of a Body Around Which a Supersonic Gas Stream Flows"

Moscow, Mekhanika Zhidkosti i Gaza, No 5, Sep-Oct 73, pp 97-104

Abstract: The problem of strong injection on the surface of a body located in a supersonic gas stream is studied. It is shown that in the case of intensive injection, the motion of the injected gas can be described by Euler equations, while the influence of viscosity and effects of transfer appear only near the area of the line of the interface discontinuity separating the incident stream from the injected gas. It is found that in the first approximation, the pressure is constant across the layer and equal to the pressure on the interface. The problem of hypersonic flow around a plate or wedge of finite dimensions (considering the influence of the bow portion of the body) with arbitrary injection of an incompressible fluid on the surface, assuming that transverse pressure gradients can be ignored. In contrast to earlier works, a precise solution is constructed for the initial system of equations and it is shown strictly that the influence of the finite dimensions of the body in this case is predominant. The solution of the problem of injection of a fluid from a step in the body is also solved.
1/1

USSR

UDC 534.222.2

KOROBEYNIKOV, V. P., LEVIN, V. A., MARKOV, V. V.

"Explosion in A Combustible Gas Mixture"

Nauch. Tr In-t. Mekh Mock. Un-ta, [Scientific Works of the Institute of Mechanics], Moscow University, 1971, No 11, pp 83-89. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1B211 by G. A. Adadurov).

Translation: The problem of the explosion of a quiet, combustible mixture of gases is studied when energy is instantly liberated at a point along a plane or straight line. The gas is considered ideally nonviscous and non-heat-conducting. The process of combustion is calculated using a model which considers the delay time of ignition and subsequent simultaneous occurrence of the forward and reverse reactions. The equations are taken as Arrhenius dependences.

The analysis performed shows that the motion of the gas, in which exothermic reactions may occur, can be developed in two stages. The initial stage is when the quantity of energy liberated in the area limited by the flame front is small in comparison to the explosive energy. The course of the process in this stage is described by formulas providing the solution of the problem of a strong point explosion. The chemical reactions occur against the background of this flow. The strongly overcompressed detonation wave which develops with the explosion breaks down to an ordinary compression jump

USSR

UDC: 538.4

BARMIN, A. A. and LEVIN, V. A.

"Asymptotic Behavior of a Plane Magnetohydrodynamic Detonation Wave"

Nauchn. tr. In-t mekh. Mosk un-ta (Scientific Transactions of the Moscow University Institute of Mechanics) 1970, No. 1, pp 83-87 (from RZh-Mekhanika, No. 2, Feb 71, Abstract No. 2B11)

Translation: The asymptotic behavior of a plane magnetonydrodynamic detonation wave is considered in a medium with infinite electrical conductivity, in an external magnetic field of arbitrary direction. Equations are presented which describe the motion of an ideal, infinitely conducting gas with plane waves and characterizing the transition through a magnetohydrodynamic detonation wave with the heat emission per unit mass of the gas taken into account. To estimate the deviation of the detonation wave intensity from the intensity of the Chapman-Jougue wave, a small parameter $\varepsilon$ is introduced, which is expanded into equations characterizing

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USSR

BARMIN, A.A., et al, Nauchn. tr. In-t mekh. Mosk un-ta, 1970, No 1, pp 83-87
(from RZh-Mekhanika, No 2, Feb 71, Abstract No 2B11)

the transition through the magnetohydrodynamic detonation wave. Then, by using the concept that the flow behind the detonation wave close to the Chapman-Jougue wave is a traveling Riemann wave, the authors obtain an equation for $\varepsilon$. The integration of this equation gives the asymptotic law for the behavior of the detonation wave and the asymptotic expressions for the parameters of the gas behind the wave. It is found that the asymptotic behavior of the magnetohydrodynamic detonation coincides with the asymptotic behavior of the plane supercompressed detonation wave in ordinary gas dynamics. Bibliography of 15. Yu. N. Denisov

2/2

Acc. Nr.: AM0045250 Ref. Code: UR0000

Levin, V. A.

Stabilization of a Discrete Number of Frequencies (Stabilizatsiya diskretnogo mnozhestva chastot) Moscow, Energiya, 1970, 326 pp (SL:1858)

TABLE OF CONTENTS:



Reel/Frame 19780167

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AM0045250

The book deals with the theory, design and use of stabilization systems of a discrete number of frequencies...

It was written for scientists and specialist in the field of radio-communication, radio-navigation and radio-measurement techniques, as well as senior college students.

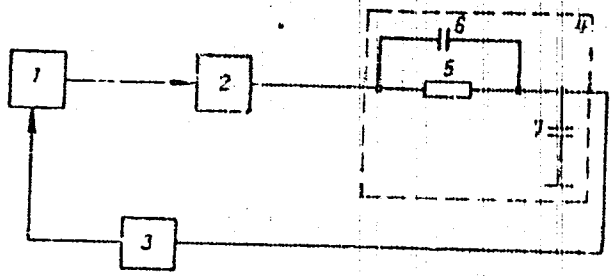
LD

19780168

AA0043330 LEVIN V.A. UR 0482

Soviet Inventions Illustrated, Section II Electrical. Derwent,

242980 AUTOMATIC FREQUENCY TUNER FOR GENERATORS, contains in the feedback circuit a frequency discriminator (2) with LF filter and frequency control unit (3). A reduction of instability period is obtained by the inclusion of filter (4) between blocks (2) and (3). 2/70

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1/1 3.8.67 as 1177042/26-9. V.A.LEVIN. (23.9.69) Bul 16/ 5.5.69. Class 21a4. Int.Cl. H 03b, H 03j.

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19761553

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--DETERMINATION OF THE RADIATION LOADING ON THE THYROID GLAND AND ORGANISM IN DIAGNOSTIC USE OF RADIOIODINE -U-

AUTHOR--LEVIN, V.A.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 6, PP 62-67

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIAGNOSTIC METHODS, THYROID GLAND, RADIOACTIVE TRACER, IODINE ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1518 STEP NO--UR/0241/70/015/006/0062/0067

CIRC ACCESSION NO--AP0128913

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128913

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR INVESTIGATED WITH THE AID OF RADIOIODINE 32 PERSONS WITH EUTHYROID HORMONAL STATE, 41 PATIENTS WITH MILD THYROTOXICOSIS, 14 PATIENTS WITH THYROTOXICOSIS OF MODERATE SEVERITY AND 6 PATIENTS WITH HYPOTHYROSIS. THE AUTHOR ALSO DETERMINED THE EFFECTIVE PERIODS OF RADIOIODINE SEMIEXCRETION FROM THE THYROID GLAND AND PATIENT'S BODY, WHICH WERE USED FOR EVALUATION OF THE VALUE OF RADIUM LOADING. ACCORING TO THE DATA DERIVED THE MEAN ABSORBED DOSE IN THE THYROID GLAND IN ADMINISTRATION OF 50 MU C OF RADIOIODINE COMPRISED 87 RAD FOR PATIENTS WITH EUTHYROID HORMONAL STATE, 124 RAD FOR PATIENTS WITH MILD THYROTOXICOSIS, 134 RAD FOR PATIENTS WITH THYROTOXICOSIS OF MODERATE SEVERITY AND 7 RAD FOR PERSONS WITH HYPOFUNCTION OF THE THYROID GLAND. IN RADIODIAGNOSTIC INVESTIGATION OF THE THYROID GLAND THE INTEGRAL ABSORBED DOSE DID NOT EXCEED 80EGREES 10 PRIME3 R-RAD.

FACILITY: KAFEDRA RENTGENOLOGII I RADIOLOGII I MOSKOVSKOGO MEDITSINSKOGO INSTITUTA IM. I. M. SECHENOVA.

UNCLASSIFIED

USSR

UDC 621.316.722.1(088.8)

LEVINA, G.V., LEVIN, V.G.

"Voltage Regulator"

USSR Author's Certificate No 262997, filed 22 Apr 68, published 10 June 70 (from RZh--Elektronika i yeye primeneniye, No 1, January 1970, Abstract No 1B467P)

Translation: A circuit is proposed for a voltage regulator with a series composite regulator transistor, a single-stage d-c amplifier, and a silicon stabilitron -- a source of reference voltage, in which a special circuit for supply of the amplifier transistor is used which assures an increase of stability without use of a supplementary source for supply of the amplifier. In accordance with the object of the invention, the d-c amplifier is supplied across a semiconductor and a supplementary filter capacitor from the common rectifier of the regulator to an inductive filter, by virtue of which the voltage for supply of the amplifier is found to be approximately 1.44 times more than the voltage for supply of the control transistor of the regulator. 1 ill. S.D.

USSR UDC: 577.4

LEVIN, V. I.

"Reliability Synthesis of Automata With Limitation on the Number of Correcting Elements"

Riga, Teoriya konehcn. avtomatov i yeye pril.--sbornik (Theory of Finite Automata and its Applications--collection of works), vyp. 1, "Zinatne", 1973, pp 5-16 (from RZh-Matematika, No 10, Oct 73, abstract No 10V395 by N. Katerinochkina)

Abstract: Let there be L versions of an unreliable automaton with a single output operating in a two-valued alphabet. Further let there be an unlimited number of threshold elements with $l$ inputs, where $l < L$. A threshold element, receiving $l$ versions of an unreliable signal, produces the correct signal at the output if the number of erroneous inputs is less than some number $a_0$, the error threshold. It is required on the basis of L available observations to construct a restoring unit from the threshold elements which gives the true value of the output signal of the automaton with a certain probability; the probability of the restoring error must not exceed a certain level, and the number of threshold elements is to be minimized. The article gives a solution of the formulated problem when a number of limitations are made on the

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USSR

LEVIN, V. I., Teoriya konechn. avtomatov i yeye pril., vyp. 1, "Zinatne", 1973, pp 5-16

initial data. Levels of effectiveness of signal restoration are studied. An algorithm is presented for synthesizing a restoring unit.

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USSR

LEVIN, V. I.

"Reliability Synthesis of Automata with Limitation on the Number of Correcting Elements"

Teoriya Konechn. Avtomatov i yeye Pril. [Theory of Finite Automata and Its Applications -- Collection of Works], No 1, Riga, Zinatne Press, 1973, pp 5-16 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V395)

Translation: Suppose there are L versions of an unreliable automaton with one output, working in a two-character alphabet. Suppose also that there is a limited number of threshold elements (TE) with l inputs, where $l < L$. The TE, receiving l versions of the unreliable signal, outputs the correct signal if the number of false inputs is less than a certain number $a_0$, the error threshold. The requirement is to use the available L observations to synthesize a restoration organ (RO) of TE which will output the true value of the output signal of the automaton with a certain probability, and the probability of restoration error must not be above a certain permissible level, while the number of TE used should be minimal. This article solves this problem with a number of limitations placed on the inital data. Conditions of effectiveness of signal restoration are studied. An algorithm for synthesis of RO is presented.

1/1

N. Katerinochkina

USSR

UDC: 577.4

LEVIN, V. I.

"Infinite-Valued Logic and Transient Processes in Finite Automata"

Avtomatika i vychisl. tekhnuja (Automation and Computer Technology), 1972, No 6, pp 1-9 (from RZh-Kibernetika, No 5, May 73, abstract No 5V549 by N. Katerinochkina)

Translation: The author considers asynchronous finite automata without storage given by structural circuits in which there are no feedbacks. As component elements the circuits contain deterministic logic elements, pure delay elements and filters. Methods of studying transient processes in such automata are proposed which use the concepts of infinite-valued logic.

1/1

USSR

LEVIN, V. I.

UDC: 8.74

"Accuracy and Reliability of an n-Place Binary Counter With Ripple-Through Carry"

Riga, Vopr. sinteza konechn. avtomatov--sbornik (Problems of Synthesizing Finite Automata--collection of works), "Zinatne", 1972, pp 187-198 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V613 [author's résumé])

Translation: The distribution and statistical characteristics of error in a counter with ripple-through carry are derived for the case of random errors of elements. The probability of true readings of a counter is established as well as the permissible number of digital places (for given accuracy requirements).

1/1

USSR

UDC 615.849.2+616-073.916:546.79

BOCHKAREV, V. V., LEVIN, V. I., STANKO, V. I., SEDOV, V. V., KHARLAMOV, V. T., KOZLOVA, M. D., and TARASOV, N. F., Institute of Biophysics, Ministry of Health USSR

"New Radiopharmaceuticals and Prospects for Their Clinical Use"

Moscow, Meditsinskaya Radiologiya, No 1, 1972, pp 4-12

Abstract: Description of the methods of preparation and most important properties of some recent Soviet-developed radioactive drugs based on relatively short-lived isotopes: (a) $In^{111}$ preparations for liver (colloidal solution) and kidney (citrate complex) scanning; (b) iodobenzoic acid with $I^{131}$ to study liver detoxification function; (c) colloidal solution of $Pd^{103}$ for prolonged and uniform preoperative irradiation of tumors of different sites and sizes; (d) combined oleophilic preparations with different isotopes ($Y^{90}$, $In^{111}$, $Pd^{103}$, $Au^{198}$) for local irradiation of lymph nodes; (e) X-ray contrast media, iodoethiol and iodolinethol, to visualize lymph nodes; (f) resorptive beta applicator with $Y^{90}$ for the treatment of eye tumors (clinical trials of the applicator in a group of patients with melanoblastomas showed complete or partial resorption of the tumor and no recurrences during the observation period (6 months to 2 years). Improvement in the technology of preparing two important

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USSR

BOCHKAREV, V. V., et al., Meditsinskaya Radiologiya, No 1, 1972, pp 4-12

diagnostic agents containing $I^{131}$ albumin macroaggregates (used for scanning in many lung diseases) and polyvinylpyrrolidone (used in the diagnosis of exudative enteropathy and other diseases) has resulted in marked enhancement of their quality.

2/2

USSR

UDC: 519.24

LEVIN, V. I.

"The Method of Matrix Expansions in the Investigation of Extremum Systems"

V sb. Zadachi statist. optimizatsii (Problems of Statistical Optimization --collection of works), Riga, "Zinatne", 1971, pp 97-106 (from RZh-Kiternetika, No 12, Dec 71, Abstract No 12V404)

Translation: It is shown that the procedure of expanding a matrix product in a series is applicable to step-by-step extremum systems functioning in the presence of weak interference. Author's abstract.

1/1

USSR

UDC: 51.621.391

LEVIN, V. I.

"Probabilistic Methods of Studying the Reliability of Finite Automata"

V sb. Veroyatnostn. avtomaty i ikh primeneniye (Probabilistic Automata and Their Use--collection of works), Riga, "Zinatne", 1971, pp 181-199 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V416)

Translation: A survey of papers on the probabilistic analysis of the reliability of finite automata.

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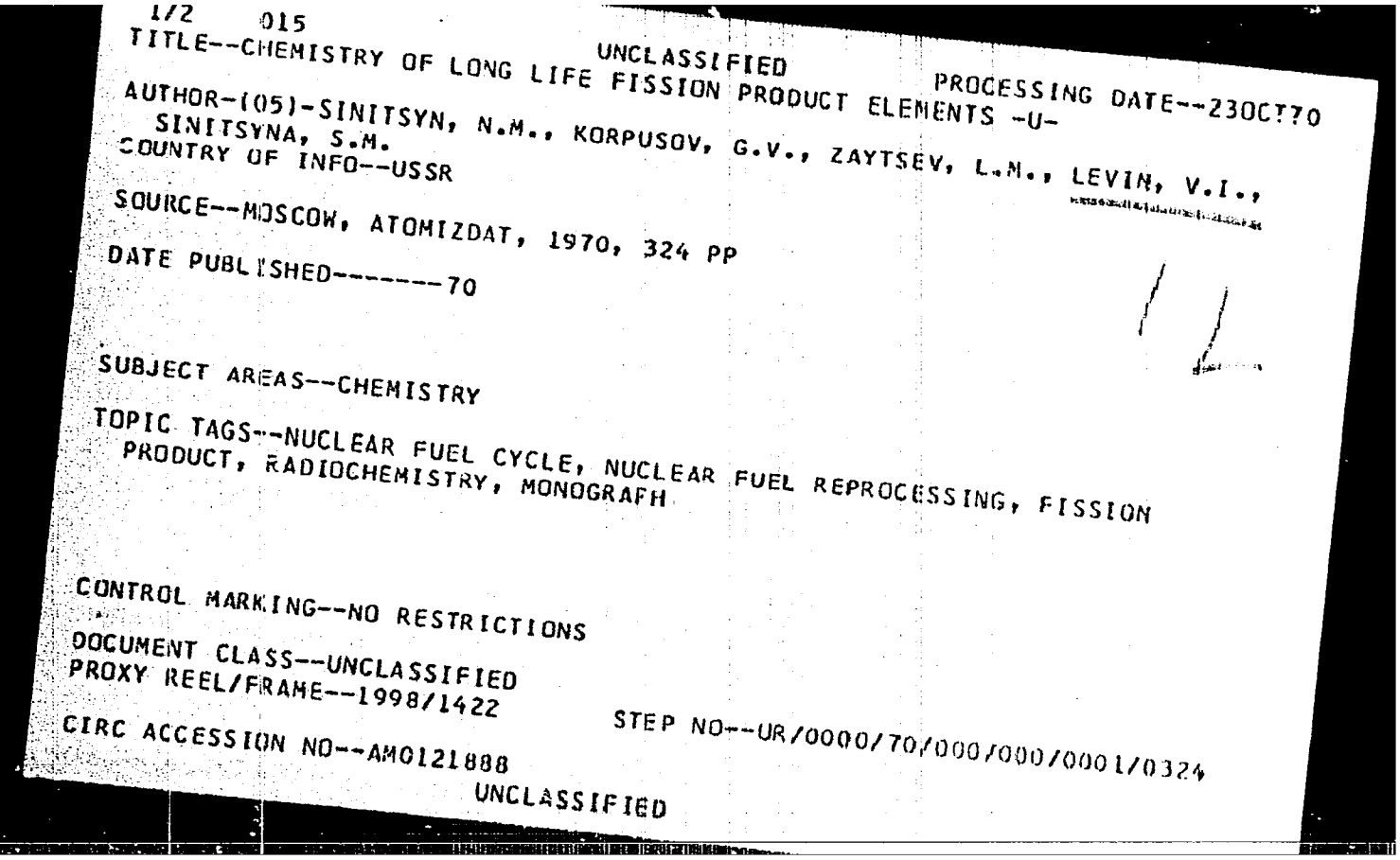

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--CHEMISTRY OF LONG LIFE FISSION PRODUCT ELEMENTS -U-

AUTHOR-(05)-SINITSYN, N.M., KORPUSOV, G.V., ZAYTSEV, L.M., LEVIN, V.I., SINITSYNA, S.M.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ATOMIZDAT, 1970, 324 PP

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NUCLEAR FUEL CYCLE, NUCLEAR FUEL REPROCESSING, FISSION PRODUCT, RADIOCHEMISTRY, MONOGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1422 STEP NO--UR/0000/70/000/000/0001/0324

CIRC ACCESSION NO--AM0121888

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

2/2 015

CIRC ACCESSION NO--AM0121888

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. INTRODUCTION 4. CHAPTER I TECHNOLOGY IN PROCESSING OF NUCLEAR FUEL 12. II CESIUM 49. III STRONTIUM 80. IV RARE EARTH ELEMENTS 111. V ZIRCONIUM AND NIOBIUM 180. VI RUTHENIUM 243. VII TECHNETIUM 282. VIII REPROCESSING OF WASTE WHICH CONTAINS FISSION PRODUCTS 296. THE BOOK DEALS WITH THE PRESENT STATE OF CHEMISTRY OF BASIC RADIOACTIVE LONG LIFE ELEMENTS FORMING DURING FISSION OF NUCLEAR FUEL. THE BOOK WAS WRITTEN FOR SCIENTISTS AND ENGINEERS WORKING IN THE FIELD OF RADIOCHEMICAL TECHNOLOGY. IT CAN BE RECOMMENDED ALSO AS A TEXTBOOK TO COLLEGE AND POST GRADUATE STUDENTS OF RADIOCHEMISTRY.

UNCLASSIFIED

USSR

UDC 681.325.6-525

LEVIN, V. I., Scientific Research Institute of Heat and Power Engineering Equipment

"A Pneumatic Logic Element"

Moscow, Otkrytiya, Izobreteniya, Promychlennyye Obraztsy, Tovarnyye Znaki, No 16, 1970, Author's Certificate No 270344, filed 2 Feb 66, p 112

Abstract: This Author's Certificate introduces a pneumatic logic element which contains two chambers, each of them having an input channel, loose discs located in the chambers, a loose rod located in a channel which connects the chambers and is connected to the output channel, and a groove in one of the chambers which connects it to the output channel no matter what position the disc is in. As a distinguishing feature of the patent, the functional possibilities of the logic element are extended by making an annular recess which is connected to an additional input channel in the chamber with no groove.

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1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ANALYSIS OF LOGICAL SCHEMES WITH HIGHLY RELIABLE ELEMENTS -U-

AUTHOR--LEVIN, V.I.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEKHANIKA, 1970, NR 6, PP 110-117

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--COMPUTER LOGIC, SIGNAL ELEMENT, SIGNAL INTERFERENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1340 STEP NO--UR/0103/70/000/006/0110/0117

CIRC ACCESSION NO--AP0124990

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124990

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE LOGICAL SCHEMES WITH RANDOM DEPENDENT INPUTS AND ELEMENTS POSSESSING RANDOM HARDLY POSSIBLE ERRORS OF THE KIND (1 YIELDS 0) AND (0 YIELDS 1), THERE IS PRESENTED (A) THE CALCULATION OF THE PROBABILITY OF OBTAINING A PROPER SIGNAL AT THE OUTPUT. (B) THE CALCULATION OF THE DISTRIBUTION OF THE PROBABILITIES OF INPUT SIGNALS. THE SOLUTION IS BASED ON THE LINEARIZATION OF THE SOUGHT FOR CHARACTERISTICS AND ON THE PRINCIPLE OF SUPERPOSITION.

UNCLASSIFIED

UDC 577.4

USSR

LEVIN, V. I.

"Calculating the Probability of Correct Operation of an Automaton with Possible Failures"

V sb. Vopr. sinteza konechn. avtomatov (Problems of Synthesizing Finite Automata -- collection of works), Riga, Zinatne Press, 1972, pp 109-116 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V423)

No abstract

1/1

USSR

VORONOVITSKIY, M. M., GLUZBERG, G. YE. and LEVIN, V. L.

"Infinite-Dimensional Analogues of the Problem of Linear Programming and a Theorem on a Saddle Point"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973, p 116 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V494)

Trnaslation: Suppose X and Y are real, distinguishable, locally convex spaces, $K_x$ and $K_y$ are closed convex cones in them and A is a continuous linear mapping. The following problem is studied: minimize

$$f(x) \tag{1}$$

under the conditions

$$Ax \geq y_0, \; x \geq 0, \tag{2}$$

where f X, $y_0$ Y.

Theorem. Suppose: 1) any non-negative linear functional in Y is continuous, 2) for any y Y we can find vector $x \geq 0$ and number $\lambda$ such that $y \leq Ax + \lambda y_0$. Then, the saddle point theorem is correct for problems (1) and (2).

From the article

1/1

USSR

LEVIN, V. M., CHERNOZATONSKIY, L. A.

"Sound Instabilities in Semiconductors in a High-Frequency Electric Field"

Leningrad, Fizika Tverdogo Tela, Vol 15, No 4, 1973, pp 1243-1245

Abstract: A study was made of the parametric sound effects in a semiconductor in an AC field with a high-frequency component: $E(t) = E_0 + E_1 \cos \Omega t$ for $\Omega \sim \omega_\alpha >> v_\alpha/\bar{\ell}$, where $\omega_\alpha = qv_\alpha$ is the sound frequency, $\bar{\ell} = v_T/\nu$, $v_T$ and $\nu$ are the thermal velocity and the collision frequency of the current carriers. Here, the free path length $\bar{\ell}$ is greater than the sonic wavelength ($q\bar{\ell} >> 1$), and the formation of the forced electron density wave takes place as a result of movement of individual electrons in a nonuniform electric field $E_\sim(r, t)$ accompanying the sound vibration. The plasma subsystem is described on the basis of the kinetic Boltzman equation for the carrier distribution function. The carrier dispersion is considered by the collision integral in the $\tau$-approximation [H. N. Spector, Phys. Rev., No 165, 562, 1968]. The effects arising are analyzed for a semiconductor with a piezobond. The calculations can be generalized to the case of the electron-phonon interaction in terms of the deformation potential.

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--A FREQUENCY FERRODYNAMIC SYSTEM OF CONTROL AND REGULATION INSTRUMENTS -U-

AUTHOR-(05)-DIDENKO, K.I., BRAUDE, V.A., GAFANOVICH, M.D., ZAGARIY, G.I., LEVIN, V.M.

COUNTRY OF INFO--USSR

SOURCE--A FREQUENCY FERRODYNAMIC SYSTEM OF CONTROL AND REGULATION INSTRUMENTS. CHASTOTNO FERRODYNAMICHESKAYA SISTEMA PRIBOROV KONTROLYA I

DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--FREQUENCY CONTROL, FERROMAGNETIC STRUCTURE, ELECTRONIC EQUIPMENT, DESIGN BUREAU, INDUSTRIAL AUTOMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0576 STEP NO--UR/0000/70/000/000/0001/0222

CIRC ACCESSION NO--AM0110369

UNCLASSIFIED

2/2 -020 UNCLASSIFIED PROCESSING DATE--020CT70

LRC ACCESSION NO--AM0110369

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. CHAPTER I THE COMPOSITION AND STRUCTURE OF A COMPLEX OF FREQUENCY FERRODYNAMIC EQUIPMENT 4. II UNIFIED NODES, UNITS AND ELEMENTS 14. III PRIMARY MEASURING INSTRUMENTS AND COMPLEXES 100. IV SECONDARY INSTRUMENTS AND MECHANISMS 169. V REGULATORS AND AUXILIARY MECHANISMS 207. LITERATURE 221. EXAMINED ARE COMPOSITION, STRUCTURE, PRINCIPLES OF DESIGN AND BASIC TECHNICAL CHARACTERISTICS OF A COMPLEX OF EQUIPMENT DESIGNED AT THE SPECIAL CONSTRUCTION BUREAU OF SYSTEMS OF AUTOMATIC CONTROL IN KHAR'KOV FOR THE CONSTRUCTION OF VARIOUS AUTOMIZED SYSTEMS OF CONTROL AND REGULATION IN VARIOUS BRANCHES OF INDUSTRY. THE BOOK IS FOR SPECIALISTS IN THE FIELD OF AUTOMATION OF PRODUCTION DESIGNING SYSTEMS OF AUTOMATION IN THEIR INDUSTRIAL OPERATION.

UNCLASSIFIED

USSR

UDC 519.33+519.272

ARKIN, V. I., LEVIN, V. L., Central Mathematical Economics Institute, Academy of Sciences of the USSR, Moscow

"Variational Problem With Functions of Several Variables and Operator Limitations: Principle of the Maximum and Theorem of Existence"

Moscow, DAN SSSR, 1971, vol 200, No 1, Sep 71, pp 9-12

Abstract: The following variational problem is considered. It is required to maximize the functional

$$\Phi(\bar{u}) = \int_0^1 \int_0^1 c(x, y, u(x, y))\,dx\,dy$$

assuming the limitations

$$\int_0^1 f(x, y, u(x, y))\,dy = 0;$$

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USSR

ARKIN, V. I., LEVIN, V. L., DAN SSSR, vol 200, No 1, Sep 71, pp 9-12

$$\int_0^1 g(x, y, u(x, y))\,dx = 0;$$

the mapping $\bar{u} = u(x, y) : K \to U$ is measurable and

$$u(x, y) \in U(x, y)$$

for nearly all $(x, y) \in K$ where $K = \{(x, y) : 0 \leqslant x \leqslant 1, 0 \leqslant y \leqslant 1\}$, $U$ is a complete, separable metric space. A necessary and sufficient condition of optimality is established in the form of the principle of the maximum, and a theorem of existence of the extremum is formulated. Bibliography of nine titles.

2/2

Public Health, Hygiene and Sanitation

USSR

UDC 616.74-001.34-091

LEBEDEVA, A. F. and LEVIN, V. N., Institute of Physical Culture imeni P. F. Lesgaft

"Pathomorphological Changes in the Skeletal Muscles of Animals Exposed to Vibration"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, Vol 15, No 11, Nov 71, pp 25-28

Abstract: A morphological study of skeletal muscles was carried out on 30 rats that had been subjected to vibrations with a frequency of 50 cycles and an amplitude of 0.6-0.8 mm 5 hrs per day for 3 mos. Structural changes in the muscles were observed, which were more pronounced in the legs than in the back. Changes involved local separation, rupture, and dystrophy of muscle fibers, complete lysis of some fiber bundles, and degeneration of cell nuclei. Proliferation of connective tissue in damaged sections took place. Similar changes were observed in the muscles of rats subjected to intensive physical stresses for periods up to 1 yr. There was a decrease in the content of DNA in nuclei and of RNA in the cytoplasm as compared with controls. The content of total proteins in the muscles was reduced and there was also a decrease, although slight, in the content of glycogen in them. The degeneration of

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002201810003-4"

USSR

LEBEDEVA, A. F., and LEVIN, V. N., Gigiyena Truda i Professional'nyye Zabolevaniya, Vol 15, No 11, Nov 71, pp 25-28

muscle fibers was evidently associated with disruption of innervation, vascular spasms, and disturbances in acetylcholine metabolism. The work described was carried out at the Leningrad Sanitary-Hygiene Institute.

2/2

USSR

LEVIN, V. R.

"Asymptotically Optimal Algorithms for Detection of Signals against a Background of Noise (Review)

Tr. Sib. fiz.-tekhn. in-ta pri Tomsk. un-te [Works of Siberian Institute of Physics and Technology of Tomsk University], 1973, No 63, pp 6-48 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V231 by D. Chibisov)

Translation: A review on aysmptotic methods in statistical radio engineering. The approach of La Kam is presented, based on concepts of contiguality and asymptotic sufficiency. Results produced on this basis for a number of specific models are presented. Problems are studied in which the distribution of noise is not fully known, both in the parametric and the nonparametric statement.

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USSR

BOBKOLSKIY, V. N., DERGUNOVA, V. S., IVANOVA, T. N., KOSTIKOV, V. I., LEVIN, V. Ya., TARABANOV, A. S.

"Contact Interaction of Melts in the System Silicon-Niobium with Carbon Materials"

Konstrukts. Materialy na Osnove Grafita [Graphite-Based Structural Materials -- Collection of Works], No 6, Moscow, Metallurgiya Press, 1971, pp 109-115 (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 B1358 from the Resume).

Translation: The wetting of pyrographite (I), vitreous carbon (II) and graphite (III) by melts in the silicon-niobium system, produced by double arc remelting in purified argon is studied. The final contact wetting angle on porous (III) is equal to zero, on pore-free (I) and (II) it is greater than zero. It is established that the chemical activity of these materials in relationship to melts in the system Si-Nb increases in the sequence: I, II, III.

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UDC 546.26+66.022.4

USSR

YELYUTIN, V. P., ANIKEYEV, YE. F., KOSTIKOV, V. I., and LEVIN, V. YA., Moscow Institute of Steels and Alloys

"Impregnation of Compact Graphites With Melts of the System Silicon-Zirconium"

Moscow, Khimiya Tverdogo Topliva, No 1, Jan/Feb 71, pp 147-153

Abstract: The mechanism of impregnating graphites of the MPG (expansion unknown) class with liquid silicon had been studied previously. A dense composition of the type graphite-silicon -- carbide-silicon could be obtained in this way if one worked in oxidizing media and the temperature did not exceed the melting point of silicon; pure silicon always remained in the graphite pores. To avoid this disadvantage, alloys of silicon with some active element, which can interact with silicon and graphite, were used. In this case, it was found to be possible to bond the excess silicon which had not been changed into silicon-carbide, into some silicide. Two alloys were used in this study: Si+10% Zr and Si+ 25% Zr. The graphite sample was added to the respective melt in a corundum-lined crucible and kept in contact for the required time period. After the experiment, the Zr and Al contents in the melt were determined. It was found that the Zr stayed practically unchanged. The Al content in the melts did not exceed 0,1%. The impregna-

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USSR

YELYUTIN, V. P., et al., Khimiya Tverdogo Topliva, No 1, Jan/Feb 71, pp 147-153

tuon process could be divided into two parts: during the initial part (0-50 sec.), the impregnation depth depends on the square root of the time. With longer interaction times, i.e., t > 50 sec., surface diffusion of the atoms along the pore walls takes place. The mass transfer process was found to be described where t is the time and a and c are constants. Constants a and c as well as the rate of the impregnation process were calculated for three different MPG graphites at three different temperatures (1410, 1450, and 1550°C) treated with the two melts. It was found to be correct to consider the impregnation of graphite by the melts as a wetting process over the walls of the pores.

2/2

Graphite

USSR

UDC: 546.06-162

YELYUTIN, V.P., KOSTIKOV, V.I., LEVIN, V. YA., Moscow Institute of Steel and Alloys
Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Combined Coatings on Graphite"

Moscow, Neorganicheskiye Materialy, Vol 6, No 3, 1970, pp 414-417

Abstract: Protective coatings of alloys in the system Si-Zr on graphite were studied. Three types of graphites were used and the alloys included pure Si, Si+5, 10, 20 and 25% Zr. Flowability and flow-kinetics, the degree of saturation, and the structure of the coatings produced were studied. The coatings are not protective without subsequent roasting and diffusion roasting leads to the formation of a combined SiC + ZrC + $Si_xZr_y$ coating on compact graphites and a carbide coating on porous graphites.

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1/2 047 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--COMPOSITE COATINGS ON GRAPHITE -U-

AUTHOR-(03)-YELYUTIN, V.P., KOSTIKOV, V.I., LEVIN, V.YA.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 414-17

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POROSITY, GRAPHITE, PROTECTIVE COATING, COMPOSITE MATERIAL, SILICON ALLOY, ZIRCONIUM ALLOY, CARBIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0705 STEP NO--UR/0363/70/006/003/0414/0417

CIRC ACCESSION NO--AP0113569
UNCLASSIFIED

2/2 047 UNCLASSIFIED PROCESSING DATE--25OCT70

CIRC ACCESSION NO--AP0113569

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY OF PREPG. PROTECTIVE COATINGS ON GRAPHITE FROM ALLOYS OF THE SI-ZR SYSTEM WAS INVESTIGATED. THREE BRANDS OF GRAPHITE WERE STUDIED. ALLOYS OF SI WITH 0, 5, 10, 20, OR 25PERCENT ZR WERE INVESTIGATED. THE ALLOYS WERE PREPD. BY DOUBLE ARC MELTING IN AN AR ATM. FROM 99.99PERCENT PURE SI AND FROM IODIDE ZR. THE COATING WAS APPLIED IN 2 STAGES. THE SPREADABILITY, THE KINETICS OF SPREADING, AND THE IMPREGNATION OF GRAPHITES OF VARIOUS D. BY LIQ. ALLOYS OF THE SI-ZR SYSTEM WERE STUDIED. THE COATINGS APPLIED ONTO GRAPHITE FROM LIQ. SI-ZR ALLOYS WITHOUT THE SUBSEQUENT ANNEALING ARE NOT PROTECTIVE. DIFFUSION ANNEALING RESULTS IN THE FORMATION OF A COMPOSITE SIC PLUS ZRC PLUS SI SUBX ZR SUBY COATING ON DENSE GRAPHITES AND OF A CARBIDE (SIC PLUS ZRC) COATING ON POROUS GRAPHITES. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 549.212+66.01

ANIKEYEV, YE. F., KOSTIKOV, V. I., LEVIN, V. YA., and LEYDERMAN, G. M., Moscow Institute of Steel and Alloys, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Mechanism of Liquid Silicon Impregnation of Graphite"

Moscow, Khimiya Tverdogo Topliva, No 4, 1970, pp 143-146

Abstract: A study was made of impregnation of dense graphites MPG-5, MPG-6, and MPG-8 (porosity of 12, 15, and 20%, respectively) with liquid silicon in the 1410-1550° temperature range. The mass transfer process can be divided into two stages: viscid flow of liquid silicon along graphite pores (0.50 seconds) with 11.5-14.2 kcal/mole energy of activation and superficial diffusion of silicon along walls of graphite pores (50-180 seconds) with 45.0-53.2 kcal/mole energy of activation.

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1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SURFACE TENSION AND DENSITY OF MELTS IN THE SILICON ZIRCONIUM SYSTEM -U-

AUTHOR-(03)-YELYUTIN, V.P., KOSTIKOV, V.I., LEVIN, V.YA.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. V. U. Z. TSVETNAYA MET., 1970, (2), 131-133

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SURFACE TENSION, THERMAL EFFECT, ZIRCONIUM ALLOY, SILICON ALLOY, ISOTHERM, SPECIFIC DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1501 STEP NO--UR/0149/70/000/002/0131/0133

CIRC ACCESSION NO--AT0130430

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0130430

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. THE SURFACE TENSION AND DENSITY OF MELTS OF THE SI-ZR SYSTEM CONTG. ZR UP TO 30PERCENT WERE STUDIED AT TEMP. UP TO 1500DEGREESC. THE TEMP. COEFF. OF THE DENSITY OF THE ALLOYS WAS CONSIDERABLY GREATER THAN THAT OF PURE SI AND INCREASED WITH INCREASING PROPORTION OF ZR IN THE MELT. THE SURFACE TENSION ISOTHERM AT 1500DEGREESC DIFFERED FUNDAMENTALLY FROM THAT CHARACTERIZING THE SI-TI SYSTEM; BEING RATHER CLOSER TO THAT EXPECTED FOR IDEAL SOLUTIONS. MELTS CONTG. ZR OVER 25PERCENT EXHIBITED MICRO INHOMOGENEITIES.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--13NOV70

1/2 037

TITLE--SURFACE TENSION AND DENSITY OF SILICON TITANIUM MELTS -U-

AUTHOR-(03)-YELYUTIN, V.P., KOSTIKOV, V.I., LEVIN, V.YA.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. V.U.Z., TSVETNAYA MET., 1970, (1), 53-55

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SURFACE TENSION, SILICON ALLOY, TITANIUM ALLOY, LIQUID METAL, CHEMICAL REACTION, SPECIFIC DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0551 STEP NO--UR/0149/70/000/001/0053/0055

CIRC ACCESSION NO--AP0124246

UNCLASSIFIED

2/2 037 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124246

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SURFACE TENSION AND DENSITY OF SI, TI MELTS CONTG. UP TO 20PERCENT TI WERE STUDIED AT 1350-1700 DEGREESC. THE SURFACE TENSION ROSE WITH TI CONTENT, FROM 800 TO 1000 ERG-CM PRIME2 OVER THE RANGE IN QUESTION AT 1500 DEGREESC. CHEMICAL INTERACTION BETWEEN THE SI AND TI ATOMS TOOK PLACE MAINLY WITHIN THE MELT AND HAD LITTLE EFFECT ON PURELY SURFACE PROPERTIES. THE DENSITY OF THE MELT CONTG. 20PERCENT TI WAS 2.75 G-CM PRIME3 AT 1500 DEGREESC (2.46 IN THE ABSENCE OF TI).

UNCLASSIFIED

USSR

UDC 547.241

LEVIN, Ya. A., GILYAZOV, M. M., and BABKINA, E. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Kazan' Branch of the Academy of Sciences USSR, and the Branch of the Scientific Physical Chemical Research Institute imeni L. Ya. Karpov

"Cyclohexyl-β-chloroethylphosphinic Acid and Its Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 12, Dec 73, p 2786

Abstract: Reaction of cyclohexyldichlorophosphine with ethylene oxide in ether at 0° gives a quantitative yield of di-β-chloroethylcyclohexylphosphonite, $n_D^{20}$ 1.5055, $d_4^{20}$ 1.2280, which rearranges after heating to the β-chloroethylester of cyclohexyl-β-chloroethylphosphinic acid, b.p. 138-140/0.02 mm, $n_D^{20}$ 1.5090, $d_4^{20}$ 1.2400. The latter treated with $PCl_5$ yields cyclohexyl-β-chloroethylchlorophosphinate, b.p. 109-110°/0.03 mm, $n_D^{20}$ 1.5175, $d_4^{20}$ 1.2500 which can be hydrolyzed to cyclohexyl-β-chloroethylphosphinic acid, m.p. 50-52°.

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UDC 541.64:547.341

USSR

LEVIN, YA. A., PYRKIN, R. I., YAGFAROVA, T. A., and USOL'TSEVA, A. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"The Polymers and Copolymers of Divinylphosphinates"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 15 (A), No 9, Sep 73, pp 2070-2074

Abstract: The radical-chain block polymerization of derivatives of divinylphosphinic acid $(CH_2{=}CH)_2P(=O)X$ (I; X = OMe, OEt, OPr, OPh, $OC_8H_{17}$, $OCH_2CH_2CH_2Cl$, $OCH_2CH_2Br$, $NEt_2$) in the presence of azoisobutyric acid resulted in the formation of polymers with a tridimensional network, the properties of which ranged from those of elastomers to those of solids. Polymerization of I (X = OEt) in benzene resulted in the formation of a polymer with a tridimensional network, while that in EtOH led to a soluble cyclolinear oligomer. In the Copolymerization of I (X = OEt) with styrene or methyl methacrylate, I (X = OEt) was less reactive than the monomer that did not contain P, so that tridimensional and soluble polymers formed which contained less P in relation to sytrene or methyl methacrylate than the initial monomer mixture.

1/1

USSR

UDC 547.341

PYRKIN, R. I., LEVIN, Ya. A., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Kazan' Branch of the Academy of Sciences, USSR

"Reactions in the System $C_2H_4$-$PBr_3$-$AlBr_3$"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 8, Aug 73, pp 1705-1713

Abstract: A complex of reactions in the system $C_2H_4$-$PBr_3$-$AlBr_3$ leads to the final products including β-bromoethyldibromophosphine, tetrabromophosphine, and a complex of bis-β-bromoethyltribromophosphorane. A reaction sequence is proposed which includes an electrophilic attack by a bromine atom of the ethylene at the positively charged phosphorus atom of the complex $BrCH_2CH_2^+PBr_3BrP^-AlBr_3$, which forms as a result of a nucleophilic attack of PBr on the α-carbon atom of the complex $BrCH_2CH_2PBr_2 \cdot AlBr_3$. Ethylene enters the $BrCH_2CH_2PBr^+Al^-Br_4$ complex at the P-Br bond. Synthesis of bis-β-bromoethylphosphinic acid and its esters was developed, based on the hydrolysis or alcoholysis of the complex $(BrCH_2CH_2)_2PBr_2^+AlBr_4^-$ forming directly in the system $C_2H_4$-$PBr_3$-$AlBr_3$.

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USSR UDC 547.341.26'118.07

PYRKIN, R. I., and LEVIN, YA. A., Order of the Red Labor Emblem Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova

"Process for the Preparation of Alkyl Esters of β-Bromoethylalkylphosphonous Acid"

USSR Author's Certificate No 362023, filed 24 Mar 71, published 13 Dec 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 2, 1973, p 54)

Translation: This process is improved in that the β-bromoethyldibromophosphine reacts with the brominated alkyls in the presence of aluminum bromide with subsequent treatment of the generated complex with alcohol. The desired product is separated by known methods.
2. The process described in number 1 is improved in that the reaction generating the complex occurs in an environment of inert organic solvents, for example; cyclohexane.

1/1

USSR

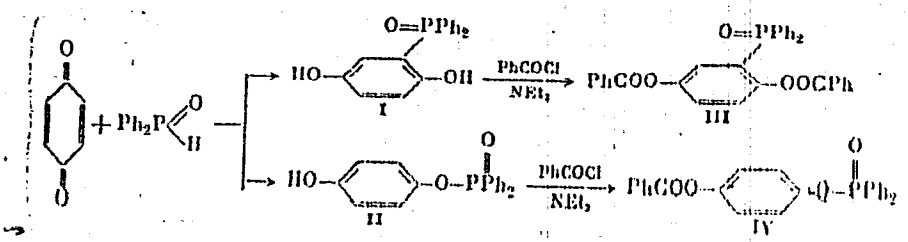
UDC 547.241+547.341

MAGDEYEV, I. M., LEVIN, YA. A., and IVANOV, B. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova, Academy of Sciences USSR

"The Product of the Reaction of Diphenylphosphinous Acid and Its Chloroanhydride with $\rho$-Benzoquinone"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2415-2418

Abstract: The title reaction using the acid may proceed via two paths

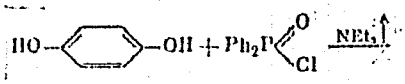



The reaction generating I proceeds rapidly and almost quantitatively to form 1:1 adduct in a benzene solution in the absence of a catalyst. This reaction may also proceed generating product II by attack on the oxygen.
1/2

USSR

MAGDEYEV, I. M., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2415- 418

The ether II may also be prepared by the following reaction starting with the anhydride:



Two additional compounds (III) and (IV) were prepared from compounds I and II respectively., by treatment with PhCOCl and triethylamine. Structures were confirmed by IR spectra. Preparation, compositional and physical data are given for the above four compounds.

2/2

USSR

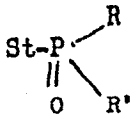
UDC 547.341

GALEYEV, V. S., and LEVIN, YA. A.

" $\beta$ -Chloroethyl and Some Unsaturated Derivatives of $\beta$ -Styrylphosphonic, -thiophosphonic, and -phosphonous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 8, 1972, pp 1714-1720

Abstract: Syntheses are described for the title compounds based on the monostyrylation of $PCl_5$. Ten compounds were prepared having the general formula



for R and R' representing such groups as $OC_2H_5$, $OCH=CH_4$, $CH_2CH=CH_2$, $OCH_2CH_2Cl$, and $CH_2CH_2Cl$,Cl. Several compounds of the types $StPR_2$, where R represents $OCH_2CH=CH_2$, and $OCH_2CH_2Cl$ and $StPS(R_2)$, where R represents $OCH_2CH_2Cl$, $OCH_2CH=CH_2$, and Cl were also prepared. Elemental composition and physical data are given for the above compounds.

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USSR UDC 661.718.1+546.183.131+549.455+547.313.2

LEVIN, YA. A., and PYRKIN, R. I.

"Products of the Interaction of Ethylene with the Phosphorus Trichloride and Aluminum Chloride System and Some Transformations of Them"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 77-82

Abstract: In connection with certain stated contradictions [A. I. Titov, et al., DAN SSSR, No 159, 1964; L. Maier, Helv. Chim. acta, No 52, 1337, 1969] and studies made of the reactions in the system made up of etheylene, aluminum halides and a compound with phosphorus-halide bond [Y. A. Levin, et al., Materialy dokladov nauchnoy konferentsii IOFKh, Kazan', 30, 1968] resulting in a number of new types of organophosphorus compounds [Ya. A Levin, et al., USSR Author's Certificate No 258306, Byull. izobr., No 1, 1970], some results are presented from studies of the interaction in the $C_2H_4$-$PCl_3$-$AlCl_3$ system. The reactions in this system lead to free β-chloroethyleichloro phosphine and a mixture of complexes on alcoholysis of which, diethyl phosphite, the monoethyl ester of β-chloroethyl phosphonic acid and bis-β-chloroethyl phosphonous acid are formed. A study was made of the transformations of β-chloroethyldichloro phosphine and bis-β-chloroethylphosphonous acid establishing the genetic relations of the compounds to one and two β-chloroethyl groups on the phosphorus atom.

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USSR

UDC 547.341.07

LEVIN, Ya. A., and PYRKIN, R. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Derivatives of Divinylphosphinic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 578-581

Abstract: Reactions of divinylchlorophosphinate with alcohols, phenol, butyl mercaptan and diethylamine in presence of triethylamine yield esters, a thioester and an amide of divinylphosphinic acid. It is possible to combine the substitution of a chlorine atom by an alkoxyl group and dehydrobromination of bis-β-bromoethylphosphinic acid choride into one reaction, yielding divinylphosphinates, by heating the reaction mixture to 70°; otherwise the principal product is an ester of vinyl-β-bromethyl-phosphinic acid. Hydrolysis of the ethyldivinylphosphinate with aqueous solutions of sodium carbonate yields the sodium salt of divinylphosphinic acid. The ease of dehydrobromination depends on the substituents of the phosphorus atom.

USSR

UDC 547.341

GALEYEV, V. S., and LEVIN, YA. A.

"Some Conversions of Products of Di- and Tristyrylation of Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1496-1499

Abstract: The action of methyl dichlorophosphite on di- β -styryltrichlorophosphorus and its hydrochloride was studied, and it was found that the principal product of the reaction is di- β -styrylphosphinic acid chloride, rather than di β -styrylchlorophosphine. In the case of the hydrochloride, small quantities of monostyryl derivatives of phosphorus -- β -styryldichlorophosphine and its oxide -- are formed as well as the principal reaction product. Di- β -styrylchlorophosphine was synthesized by disproportionation of β -styryldichlorophosphine at 240-250°C.

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USSR UDC 538.113:541.515:547.63'118

IL'YASOV, A. V., LEVIN, Ya. A., MOROZOVA, I. D., VAFINA, A. A., GOZMAN, I. P., and ZOROATSKAYA, Ye. I., Institute of Organic Chemistry, imeni A. Ye. Arbuzov, USSR Academy of Sciences, Kazan'

"Delocalization of the Unpaired Electron in Phosphorus-Containing Anion-Radicals"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Abstract: It is of current interest whether elements of the third period function as barriers in conjugated systems, or are able to participate in conjugation.

The distribution of spin density in the anion-radical of triphenylphosphine and its oxide were studied. The compounds were prepared by electrochemical reduction. For a more rigorous picture of delocalization of the unpaired electron, completely and partially deuterated $Ph_3P$ and $Ph_3PO$ were synthesized and studied. Dimethylformamide and acetonitrile solutions of the anion-radicals were studied at concentration of ca. $5 \cdot 10^{-3}$ M, using epr spectroscopy.

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USSR

IL'YASOV, A. V., et al., Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 108-111

Based on preliminary results, it is concluded that, unlike compounds of elements of the second period, the electron structure of phosphorus anion-radicals cannot be described by a simple π-electron theory; the so-called d-model must be rejected. The concepts of completely delocalized molecular orbitals and multi-center bonds must be used, with allowance for all valence electrons.

USSR UDC 541.13+541.515+542.941+661.718.1

IL'YASOV, A. V., KARGIN, Yu. M., LEVIN, Ya. A., MOROZOVA, I. D., MEL'NIKOV, B. V., VARINA, A. A., SOTNIKOVA, N. N., and GALEYEV, V. S., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Acad. of Sciences

"Electrochemically Generated Free Radicals. 6. The Reduction Mechanism of Certain Organophosphorus Compounds, and the Electron Paramagnetic Resonance Spectra of the Anion Radicals Formed"

Moscow, Izvestiya Akademii Nauk SSR, Seriya Khimicheskaya, No 4, 71, pp 770-776

Abstract: A series of organophosphorus compounds was studied in connection with their electrochemical reduction, using several methods. The electron paramagnetic method was applied in the case of electrochemically generated anion radicals of triphenylphosphine, its oxides, and the diethyl ester of β-styrylphosphosphonic acid.

Graphical data accompanying the paper include classical and commutated polarograms for the various compounds, and electron paramagnetic spectra for free radicals; numerical electrochemical data are given for nine organophosphorus compounds tested.

1/1

USSR

UDC: 547.241.07

LEVIN, Ya. A., GAZIZOVA, L. Kh., "Order of the Red Banner of Labor" Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Synthesizing β-Chloroethylphosphonic Acid Dichloride"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 15, May 71, Author's Certificate No 302345, Division C, filed 22 May 69, published 28 Apr 71, p 81

Translation: This Author's Certificate introduces a method of synthesizing β-chloroethylphosphonic acid dichloride by the reaction of the product of thermal isomerization of tris- β-chloroethyl phosphite with phosphorus pentachloride on heating in the presence of catalytic amounts of ferric chloride with subsequent isolation of the product by conventional methods. As a distinguishing feature of the patent, the product yield is increased by carrying out the process at 110-130°C.

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USSR

UDC: 547.341.07

MAGDEYEV, I. M., LEVIN, Ya. A., IVANOV, B. Ye., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Synthesizing 2,5-Dihydroxyphenyldiphenylphosphine Oxide"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 15, May 71, Author's Certificate No 302346, Division C, filed 16 Mar 70, published 28 Apr 71, p 81

Translation: This Author's Certificate introduces: 1. A method of synthesizing 2,3-dihydroxyphenyldiphenylphosphine oxide by the reaction of a phosphinous acid derivative with p-benzoquinone in an organic solvent with heating, and isolating the product by conventional methods. As a distinguishing feature of the patent, the process is simplified by using diphenylphosphinous acid dichloride as the phosphinous acid derivative, and carrying out the process in the presence of water. 2. A modification of this method distinguished by the fact that the process is carried out at 60-65°C. 3. A modification of this method distinguished by the fact that benzene is used as the solvent. 4. A modification of this method distinguished by the fact that the diphenylphosphinous acid dichloride is added with strong agitation to an emulsion of water and a benzene solution of p-benzoquinone. 5. A modification of this method distinguished by the fact that the initial reagents are taken in equimolar proportions.

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UDC 547.26'118'223.07

USSR

LEVIN, YA. A., and PYRKIN, R. I., "Order of the Red Banner of Labor Institute of Organic and Physcial Chemistry imeni A. Ye. Arbuztov

"A Method of Producing Bis-β-Bromoethylphosphinic Acid"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1970, Author's Certificate No 270731, filed 22 May 69, p 23

Abstract: This Author's Certificate introduces: 1. A method of producing bis-β-bromoethylphosphinic acid based on phosphorus halide compounds. As a distinguishing feature of the patent, the process is simplified and the product yield is increased by using phosphorus tribromide as the phosphorus halide compound. The phosphorus tribromide is interacted with ehtylene in the presence of aluminum tribromide with subsequent decomposition of the intermediate comples and isolation of the product by conventional methods. 2. The method described in (1) is distinguished in that the process is carried out first with cooling to 10-20° C, and then at a temperature of 30-45°C with subsequent heating to 100° C.

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Free Radicals

UDC 541.13+541.515

USSR

IL'YASOV, A. V., KARGIN, Yu. M., LEVIN, Ya. A., and MEL'NIKOV, B. V., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences of the USSR

"Electrochemically Generated Free Radicals. Report 5. Activation Energy of the Current-Determining Process and Subsequent Chemical Reactions"

Moscow, IAN SSSR, Seriya Khimicheskaya, No 9, Sep 70, pp 1,979-1,983

Abstract: A method is proposed for studying the mechanism of an electrochemical process and for a quantitative evaluation of kinetic parameters of the initiated or subsequent chemical reaction by measuring the activation energy of the limiting current in polarography and commutator polarography. Analysis of various special cases for both cathode and anode processes shows that secondary paramagnetic products must be taken into account in interpreting the electron paramagnetic spectra of electrochemically generated anion radicals. The method proposed in this paper was used to study the mechanism of reduction and generation of anion radicals of a number of organophosphorus and carbonyl compounds. The results are to be published in subsequent reports.

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UDC:541.6 541.124+661.718.1

USSR

LEVIN, Ya. A., GOZMAN, I. P., and SIDOROVA, Ye. Ye., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Structure and Mechanism of Formation of Oligophosphonates from Dialkyl Chlorophosphites and Aldehydes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 173-175

Abstract: Two oligomers (1 and 2) were prepared by similar reactions of $(EtO)_2PCl$ with PrCHO or PhCHO, respectively. The reaction with PrCHO was exothermic and resulted in loss of EtCl. Subsequently, the reacting mixture was heated 4 hr. at 100°, then for 1 hr at 170° in vacuo. The product was an extremely viscous liquid. The product of the reaction with PhCHO was a glassy solid. A third oligomer (3), a yellow powder, was prepared by a similar reaction from $(iso\text{-}BuO)_2PCl$ and $p\text{-}(NO_2)C_6H_4CHO$. The polyphosphonate structure $[\text{-}P(O)(OR)CHR'O\text{-}]_n$ was attributed to the alternating link of the oligomers from their hydrolysis and pyrolysis data. The 1 and 2 oligomers heated with concentrated HCl for 4 hr. yielded 95% Pr $CH(OH)PO_3H_2$ and 90% Ph $CH(OH)PO_3H_2$, respectively. Pyrolysis of 1 oligomer at 250-270° in vacuo gave 10% of a cyclic

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USSR

LEVIN, Ya. A., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 173-175

dimer containing the same bonds as 1. An unusual, stepwise polycondensation mechanism was proposed to explain formation of the oligophosphonate molecules with the ester-chloride end groups.

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UDC 77

USSR

GOROKHOVSKIY, V. M., LEVIN, YA. A., SOTNIKOVA, I. P., RAKOVA, N. F., KARUNINA, V. V., GALIMOVA, A. M.

"Certain Photographic and Physicochemical Properties of 2- and 5-n-alkyl Homologs of 4-oxo-6-methyl-1,2,4-triazole-(2,3a)-pyrimidine"

Uspekhi nauchn. fotogr. (Advances in Scientific Photography), 1970, Vol. 14, pp 24-29 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1340)

Translation: Photographic and physicochemical properties of 2- and 5-n-alkyl derivatives of sta-salt with substitutes before $C_9H_{15}$ in the second position and before $C_9H_{19}$ in the fifth position. All these substances effectively stopped aging of the emulsion; their stabilizing activity decreased with concentration and there was also observed a greater dilution for a longer alkyl radical. The action of these substances on the emulsion at the time of introduction varied: an increase and a lowering of sensitivity or fogging were encountered, but with an increase in the length of the substitute the predominant effect became desensitization in combination with defogging, a property absent in sta-salt. A

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USSR

GOROKHOVSKIY, V. M., et al, Uspekhi nauchn. fotogr., 1970, Vol. 14, pp 14-25

study of the adsorption of sta-salt homologs on the Hg electrode by the oscillographic polarography method showed that as distinct from sta-salt, which does not have oxidation-reduction peaks and capacity jumps in the region limited by the anode wave of Hg-oxidation and reduction of the background homologs of sta-salt give desorption peaks in this region, the height of which rises with an increase in the length of the substitute and correlates well with their desensitizing effect. This correlation indicates that the deactivization of the sensitivity centers is greater as substances are adsorbed more intensively. A determination of acid dissociation constants of sta-salt homologs and the solubility products of their Ag-salts showed that both quantities drop with an increase in the length of the substitute and the latter must also lead to progressive desensitization. 16 references. Authors abstract.

1/2 013 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--STRUCTURE AND MECHANISM OF FORMATION OF OLIGOPHOSPHONATES FROM DIALKYL CHLOROPHOSPHITES AND ALDEHYDES -U-

AUTHOR-(03)-LEVIN, YA.A., GOZMAN, I.P., SIDOROVA, E.E.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 173-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALDEHYDE, ORGANIC PHOTPHORUS COMPOUND, CHLORINATED ORGANIC COMPOUND, HETEROCYCLIC OXYGEN COMPOUND, OLIGOMER, CHEMICAL REACTION MECHANISM, EXOTHERMIC REACTION, MOLECULAR STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1628 STEP NO--UR/0062/70/000/001/0173/0175

CIRC ACCESSION NO--AP0100238

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100238

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING EQUIMOLAR AMTS. PRCHO AND (ETO) SUB2 PCL RESULTED IN EXOTHERMIC REACTION AND LOSS OF ETCL, COMPLETED BY 4 HR AT 100DEGREES, TO YIELD AFTER FURTHER 1 HR AT 170DEGREES FINALLY IN VACUO, A VISCOUS OLIGOMER (P(O)(OR)CHR PRIME) O) SUBN (I) (R EQUALS ET, R PRIME) EQUALS PR) (IA); HEATED WITH CONCD. HCL 4 HR THIS GAVE 95PERCENT PRCH(OH)PO SUB3 H SUB2, M. 161-2DEGREES; PYROLYSIS OF IA AT 250-70DEGREES IN VACUO GAVE 10PERCENT II (R EQUALS ET, R PRIME) EQUALS PR), B SUB0 TIMES 035 123-6DEGREES, N PRIME20 SUB0 1.4578, D PRIME20 1.1616. SIMILARLY, REACTION WITH BZH GAVE I (R EQUALS ET, R PRIME) EQUALS PH), A GLASSY SOLID, WHICH HYDROLYZED WITH AQ. HCL TO 90DEGREES PHCH(OH)PO SUB3 H SUB2, M. 172-3.5DEGREES. SIMILARLY WAS PREPD. THE OLIGOMER FROM RHO-D SUB2 NC SUB6 H SUB4 CHO AND (ISO-BUO) SUB2 PCL, A YELLOW SOLID. A SCHEME FOR FORMATION OF I WAS GIVEN.

UNCLASSIFIED

1/2 037 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DIETHYLPHOSPHONACETALS OF POLY VINYL ALCOHOL -U-

AUTHOR-(05)-LEVIN, YA.A., GAZIZOVA, L.KH., YAGFAROVA, T.A., KOVALENKO, V.I., TEYTELBAUM, B.YA.
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(3), 574-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ACETAL, ORGANIC PHOSPHORUS COMPOUND, POLYVINYL ALCOHOL, POLYMER, ELASTIC DEFORMATION, POLYMER CROSSLINKING, ESTERIFICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1208 STEP NO--UR/0459/70/012/003/0574/0579

CIRC ACCESSION NO--AP0116673
UNCLASSIFIED

2/2 037 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116673

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLY(VINYL ALC.) (I) WAS ACETALATED WITH (ETO) SUB2 P (O)CH SUB2 CHO IN THE PRESENCE OF CF SU33 CO SUB2 H AND H SUB2 O AT 60DEGREES TO GIVE A WHITE, RUBBERLIKE POLYMER (CONTG. LESS THAN OR EQUAL TO 8PERCENT P) IN 85-100PERCENT YIELD. IR SPECTRA AND THERMOMECH. TESTS SHOWED THAT THE POLYACETALS (II) (CONTG. 10PERCENT ACETALS GROUPS) WERE MORE SUSCEPTIBLE TO ELASTIC DEFORMATIONS THAN I, PRESUMABLY DUE TO DECREASED MOL. INTERACTION. INCREASED RIGIDITY, OBSD. IN II (CONTG. GREATER THAN 20PERCENT ACETAL GROUPS) HEATED TO 150-200DEGREES, WAS ATTRIBUTED TO CROSSLINKING OCCURRING DURING TRANSESTERIFICATION OF P(OET) SUB2 GROUPS WITH ADJACENT OH GROUPS. FACILITY: INST. ORG. FIZ. KHIM. IM. ARBUZOVA, KAZAN, USSR.

UNCLASSIFIED

USSR

UDC 541.515:547.1'118

IEVIN, YA. A., IL'YASOV, A. V., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Phosphonium Radical Ambidentity and Chemical Polarization of Phosphorus Nuclei in the Products of Its Reactions"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1676-1677

Abstract: During photolysis of acetone, diethylketone, acetaldehyde, and in thermolysis of ditert-butylperoxide, dicyclohexylpercarbonate, lauryl peroxide in dialkylphosphites, chemical polarization of the phosphorus nuclei is observed in $(RO)_2P\text{-}O\text{-}P(O)(OR)_2$ and in $(RO)_2P(:O)\text{-}P(:O)\text{-}(OR)_2$. The appearance of a multiplet effect in the subphosphates due to the spin-spin interaction in the system P-O-P(O) shows that these compounds form by recombination of two phosphine radicals. Concurrent presence of polarized hypophosphate indicates a double reactivity of these radicals: through the oxygen or through the phosphorus. The multiplet effect in the subphosphate corresponds to the recombination of two independently generated phosphone radicals.

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USSR

UDC 541.515:547.1'118

LEVIN, YA. A., IL'YASOV, A. V., GOL'DFARB, E. I., and VOMKUNOVA, YE. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Proof of the Existence of Phosphoroanilic Radicals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1673-1674

Abstract: During the thermolysis of di-tertiary butyl peroxide in triphenylphosphite a negative polarization of phosphorus nuclei is observed in the intermediate product -- diphenyl-tert-butylphosphite and in triphenylphosphate. During the thermolysis of benzolazotriphenylmethane in trialkylphosphites a negatively polarized dialkylphenylphosphonate is formed. During the photolysis of $CCl_3Br$ under a mercury lamp in triethyl- or tributylphosphites, concurrently with the negative polarization of phosphorus nuclei in dialkyltrichloromethylphosphonate and dialkylbromophosphate, a strong emission is observed in the starting phosphite. These facts are considered to be sufficient proof for the existence of a stable intermediate phosphoroanilic radical in the reactions cited.

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USSR

UDC 547.241'223'212

LEVIN, Ya. A., and PYRKIN, R. I., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Bromoethyl and Bis-β-bromoethyl Phosphorus Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 2, Feb 73, pp 283-288

Abstract: Dehydrobromination of β-bromoethyldibromophosphine yields vinyldibromophosphine. Starting from β-bromoethyldibromophosphine syntheses were carried out of β-bromoethylphosphonous, bis-β-bromoethylphosphinic acids and a series of their derivatives. β-Bromoethyldibromophosphine undergoes P-ethylation in presence of the ethyl bromide-aluminum bromode complex.

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USSR

UDC 620.193.5

SOROKIN, YU. I., TSEYTLIN, KH. L., VALASHOVA, A. A., NABITSKAYA, S. K., LEVIN, YA. S., Scientific-Research Institute of Organic Semi-Products and Dyes

"Influence of Water Vapor and Its Mixtures With Carbon Dioxide on Corrosion of Metals in Ammonia at 500°"

Moscow, Zashchita Metallov, No 4, 1972, pp 430-434

Abstract: It was shown earlier that the catalytic action of metals on dissociation of ammonia and their corrosion resistance are interrelated. It was therefore of interest to determine the influence of water vapor and its mixtures with $CO_2$ on the resistance of metals to a stream of gaseous ammonia. The addition of water vapor has little influence on corrosion losses of carbon steel, but its mechanical properties change significantly, specimens breaking at bending angles of 30° after 400 hours (as opposed to 90° in pure ammonia). Water vapor sharply reduces the corrosion of stainless steel. The strength properties of the steel change little. The addition of carbon dioxide with water vapor sharply increases total corrosion of carbon steel. The strength properties change slightly, but cracks appear at bending angles of 90°.

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UDC: 620.193.5

TSEYTLIN, Kh. L., SOROKIN, Yu. I., BALASHOVA, A. A., BABITSKAYA, S. M., LEVIN, Ya. S., KONYUSHENKO, A. T., GOLOVKIN, R. V., and LADYZHINSKIY, B. S., Scientific Research Institute of Organic Intermediates and Dyestuffs

"High-Temperature Corrosion of Metals in Gaseous Ammonia"

Moscow, Zashchita Metallov, Vol. 6, no. 4, 70, pp 451-454

Abstract: Processes involving the use of ammonia are known to cause corrosion of equipment. The homogeneous reaction of ammonia dissociation in the gas phase begins above 1200--1300°C. In the presence of a catalyst this temperature drops to 300--400°C. Experiments have shown that the type of metal considerably affects the thermal dissociation of ammonia and that this effect is a function of temperature. This study describes in detail the testing and effects of gaseous ammonia on KhN10T steel, KhN78T, N70M27F, and Kh15N55M16V alloys, VT-1 titanium, and MZS copper. The analysis of experimental data shows that there is a fundamental correspondence between the effect of metals on ammonia dissociation and their resistance. Therefore, to insure continuous service of equipment in gaseous ammonia, it is advisable to use materials which

USSR

TSEYTLIN, Kh. L., et al, Zashchita Metallov, Vol 6, no. 4, 70, pp 451-454

will not readily catalyze ammonia dissociation. Materials which are suitable for service under these conditions include carbon steel and N70M27F, Kh15N5S16V alloys up 400°C; Kh18N10T steel and nickel up to 300°C; KhN78T up to 600°C; aluminum, titanium, and copper up to 450°C. Considering the low specific gravity, good technological properties, relative availability, and low cost of aluminum, this metal is preferred in selecting materials for equipment operated in gaseous ammonia at high temperatures. A table illustrating the performance of the above metals during 400 hours of testing with gaseous ammonia at high temperatures, including corrosion rate tensile strength, relative elongation, % and Vickers hardness, prior to and after the experiment, is given in the original article.

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--HIGH ENERGY SCATTERING MODEL WITH A VIOLATION OF THE POMERANCHUK THEOREM -U-

AUTHOR-(04)-ANSELM, A.A., DANILOV, G.S., DYATLOV, I.T., LEVIN, YE.M.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 896-901

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PARTICLE INTERACTION, ANTIPARTICLE, INTEGRAL CROSS SECTION, NUCLEAR MODEL, SCATTERING CROSS SECTION, ENERGY SPECTRUM, HIGH ENERGY PARTICLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1000 STEP NO--UR/0367/70/011/004/0896/0901

CIRC ACCESSION NO--AP0136427

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136427

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXAMPLES ARE PRESENTED FOR THE POSSIBLE VIOLATION OF THE THEORY OF THE EQUALITY OF THE TOTAL CROSS SECTION OF PARTICLE AND ANTIPARTICLE INTERACTIONS (I. YA. POMERANCHUK, 1958) IN MODELS BASED ON THE LOGARITHMIC DEPENDENCE OF THE INCREASE IN THE INTERACTION RADIUS WITH THE INCREASING ENERGY. THE EXAMPLES SATISFIED THE GENERAL PRINCIPLES OF THIS THEORY, I.E. THE ANALYTICITY, THE CROSSING SYMMETRY, AND UNITARITY. THE DIFFRACTIONAL MODELS WITH THE S CHANNEL PARTIAL WAVE AMPLITUDE EQUAL SIMILAR TO 1-IN S AND THAT WITH THE TOTAL ABSORPTION AND CROSS SECTION SIGMA SUBTOT SIMILAR TO IN PRIME2 S ARE DISCUSSED IN DETAIL. FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--PREDICTIONS FOR THE POLARIZATION OF FINITE PARTICLES IN ELASTIC AND INELASTIC PROCESSES AT HIGH ENERGIES -U-

AUTHOR-(03)-KUDRYAVTSEV, V.A., LEVIN, YE.M., SHCHIPAKIN, A.A.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 858-69

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HIGH ENERGY PARTICLE, REGGE POLE, ELASTIC SCATTERING, INELASTIC SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1071 STEP NO--UR/0367/70/011/004/0858/0869

CIRC ACCESSION NO--AP0136491

UNCLASSIFIED

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW IS GIVEN OF POLARIZATION PROPERTIES OF FINITE PARTICLES IN ELASTIC AND INELASTIC PROCESSES AT HIGH ENERGIES. THESE PROPERTIES ARE DUE TO THE CONTRIBUTION OF VACUUM BRANCH POINTS AND TO THE CONTRIBUTION OF THE CONSPIRING REGGE POLE.

FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

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KUDRYAVTSEV, V. A., LEVIN, Ye. M., Leningrad Institute of Nuclear Physics, Soviet Academy of Sciences

"Polarization of Particles in Inclusive Reactions"

Moscow, Yadernaya Fizika, Vol 18, No 2, Aug 73, pp 451-463

Abstract: The paper discusses polarization phenomena in inclusive reactions $a+b \to c+\ldots$, for the case in which particles a,b,c have arbitrary spin. On the basis of the formalism of invariant vertices of interaction of reggeons with particles of any spin, specific predictions are made for some polarization phenomena in the central reggeon region, the three--reggeon limit, and the fragmentation region. It is found that in inclusive reactions the probabilities for production of particles with differently directed spins are not identical even in the region of pionization. (For instance, the number of $\pi$-mesons from $\rho$-decay depends on the angle between the plane of the decay and the plane of the reaction.) Experiments with polarized targets can isolate the region of target fragmentation, since it is only in this region that the quantity $f=(\sigma_- - \sigma_+)/(\sigma_+ + \sigma_-)$ (subscripts $\pm$ correspond to nucleon spins) differs from zero, although estimates show

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KUDRYAVTSEV, V. A., LEVIN, Ye. M., Yadernaya Fizika, Vol 18, No 2, Aug 73, pp 451-463

that the difference is not very great (~0.1-0.2). The authors thank M. G. Ryskin for useful discussion of the results of the work.

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USSR

GRIBOV, V. N.; LEVIN, Ye. M.; MIGDAL, A. A. (Joffe Physico-Engineering Institute, USSR Academy of Sciences)

"Fermion Regge Poles and Branch Points in the J-Plane"

Moscow, Journal of Nuclear Physics; March 1970, pp 673-86

ABSTRACT: The mechanism of the occurrence, positions, and basic properties of branch points in the complex angular momentum plane that are related to the fermion Regge poles is discussed. Additional singularities with the motion $\sqrt{u}$ for $u \to 0$ arise due to interaction of fermion reggions with vacuum reggions ("enhanced graphs"). The general situation with the singularities has two scales: $\sqrt{u}$ along the imaginary axis and $u$ along the real axis. This corresponds to two diffraction radii in the scattering amplitude: $R_1 \sim \ln s$ and $R_2 \sim \sqrt{\ln s}$. Two possible solutions for the scattering amplitude (the so-called "strong" and "weak" couplings) are investigated at asymptotically high energies, $\ln \ln s \gg 1$. In conclusion, the angular distribution in the case of weak coupling is considered.

The article includes 40 equations and 20 figures. There are 13 bibliographic references.

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USSR UDC: 669.783.5:538.2

ZAV'YALOV, V. K., RADOVSKIY, I. Z., LEVIN, Ye. S., NVZOROVA, E. G., GEL'D, P. V., Sverdlovsk

"Magnetic Properties of Liquid Alloys of Germanium with Iron, Cobalt and Nickel"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 6, 1973, pp 32-34.

Abstract: This article presents the results of investigation of the magnetic susceptibility of liquid Fe-Ge, Co-Ge and Ni-Ge alloys. The concentration-temperature dependence of magnetic susceptibility was studied by the Faraday method in the 900-1700° C temperature interval. It was found that the Curie-Weiss law is followed in Fe-Ge melts where $N_{Ge} < 0.7$, in Co-Ge melts where $N_{Ge} < 0.45$, and is not followed in Ni-Ge melts. The concentration dependences of effective magnetic moments $\mu_{eff}$ for Fe-Ge and Co-Ge alloys differ qualitatively. In the first case, the dependence of $\mu_{eff}$ on $N_{Ge}$ shows a minimum near $N_{Ge} = 0.2$, while in the second case $\mu_{eff}$ remains independent of concentration approximately up to $N_{Ge} = 0.15$, then increases from 3.0 $\mu_B$ to 3.7 $\mu_B$ (at about 30 at. % Ge).

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Physical Properties

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UDC 669.715'25-537

LEVIN, Ye. S., GEL'D, P. V., and AYUSHINA, G. D., Ural Polytechnic Institute, Chair of Physics

"Electric Resistance of Liquid Alloys of Cobalt With Aluminum"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 5, 1972, pp 111-115

Abstract: The temperature-concentration dependences of the specific electric resistance of liquid alloys of cobalt with aluminum were experimentally investigated on specimens prepared from AV000 aluminum (99.98 %Al) and electrolytic cobalt containing less than 0.04% impurities. The investigation results are discussed by reference to diagrams showing the temperature dependence of the electroconductivity $\sigma$ and the specific electric resistance $\rho$ of aluminum, the polytherms, and the isotherm (1650°C) of $\rho$ of liquid Al-Co alloys. The isotherm has an extreme character approximately in accordance with the equiatomic alloy. All alloys showed a notable increase of $\rho$ when melting. A negative temperature coefficient of electric resistance was observed on liquid Al-rich alloys (81.9 and 76.5 at% Al). Alloys with high Co-content showed typical properties of metals. The peculiarities of electroconductivity of Al-Co melts are explained by the energetic non-equivalence of different interparticle actions. Three figures, three formulas, eleven bibliographic references.

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USSR

UDC 541.123:28

LEVIN, YE. S., KOSTINA, T. K., PETRUSHEVSKIY, M. S., GEL'D, P. V., and KUROCHKIN, K. T., Ural Polytechnic Institute

"Solubility of Hydrogen in Liquid Alloys of Cobalt and Aluminum"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya No 1, 1973, pp 31-36

Abstract: The solubility of hydrogen was studied as a function of the composition of Co-Al alloys ($0 \leq x_{Al} \leq 1$) and temperature (1300-1700°C). The solubility percentage was determined from the hydrogen pressure in a closed system, with a determination error of ± 5.5%. The solubility of hydrogen in Co-Al alloys obeys the square root rule: $[H] = K\sqrt{P_{H_2}}$, where $[H]$ is the hydrogen concentration in alloy, weight percentage; $P_{H_2}$ is the hydrogen pressure in gaseous phase, bar; and K is the hydrogen solubility in alloy (weight percentage/bar $\frac{1}{2}$) which is numerically equal to its solubility in metal at $P_{H_2} = 1$ bar. The solubility process of hydrogen is accompanied by dissociation of H molecules into atoms (ions), and it changes according to the extremum rule with a minimum at 50-60 at% Al. The solubility process is of an endothermal nature and its dependence on temperature is described by $\log K = AT^{-1} + B$, where A and B are coefficients which depend only on

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